General Specifications

Item	Specification
Fluid/Lubricant Specification	
Super Premium SAE 5W-30, XO-5W30-QSP	WSS-M2C153-G

Torque Specifications

Description	Nm	lb-ft	lb-in
Battery ground bolt	10	—	89
Throttle body bolts	9	—	80
Fuel injection supply manifold bolts	10	—	89
42 pin engine bulkhead electrical connector bolt	6	—	53
Ignition coil cover bolts	10	—	89
Battery supply wire nut to power distribution box	8	—	71
Battery supply wire nut to generator	8	—	71
Air intake scoop bolts	25	18	—
Air intake scoop bracket bolt	25	18	—
Air intake scoop bracket nuts	25	18	—
Air intake scoop bracket throttle body nut	9	—	80
Exhaust gas recirculation (EGR) vacuum regulator solenoid bolts	10	—	89
Wiring harness bracket bolt	20	15	—

Fuel Charging and Controls

The fuel injection supply manifold (9F792):

- delivers fuel to the fuel injector.
- receives fuel from the fuel supply line.

The throttle body:

- controls air supply to the upper intake manifold by positioning the throttle plate.
- connects the accelerator cable and, if equipped, the speed control actuator cable to the throttle lever.
- is not adjustable.
- cannot be cleaned.

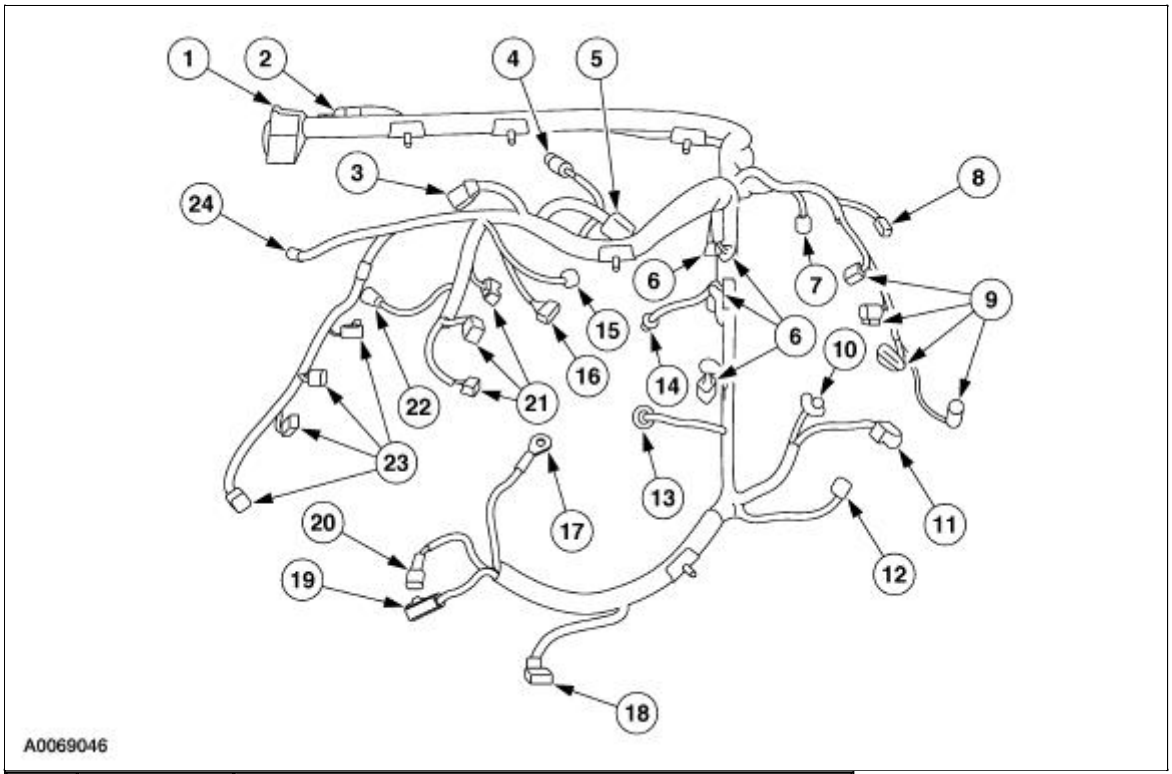
The fuel injector:

- is electrically operated by the powertrain control module (PCM).
- has an internal solenoid that opens a needle valve to inject fuel into the lower intake manifold.
- atomizes the fuel as the fuel is delivered.
- is deposit-resistant. Do not clean.

The fuel pressure relief valve:

- is used to inspect and relieve fuel pressure.

Fuel Charging Wiring Connections



Item	Part Number	Description
1	—	Engine control sensor wiring 42 pin electrical connector
2	—	16 pin electrical connector
3	—	Engine control jumper harness electrical connector
4	—	RH heated oxygen sensor (HO2S) electrical connector
5	—	Transmission main control harness electrical connector.
6	—	Fuel injector electrical connectors
7	—	Heated positive crankcase ventilation (PCV) valve electrical connector.
8	—	Radio ignition interference capacitor electrical connector
9	—	Ignition coil electrical connectors
10	—	Generator battery electrical connector
11	—	Generator field electrical connector
12	—	Engine coolant temperature (ECT) sensor electrical connector
13	—	Fuel pressure sensor electrical connector
14	—	Exhaust vacuum regulator (EVR) electrical connector
15	—	Idle air control (IAC) electrical connector
16	—	EGR backpressure transducer electrical connector
17	—	Power distribution box battery feed electrical wire
18	—	Camshaft position (CMP) sensor electrical connector

19	—	16 pin electrical connector
20	—	16 pin electrical connector
21	—	Fuel injector electrical connectors
22	—	Throttle position (TP) sensor electrical connector
23	—	Ignition coil electrical connectors
24	—	Radio ignition interference capacitor electrical connector

Fuel Charging and Controls

Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.

Idle Speed Adjustment

Powertrain Control/Emissions Diagnosis (PC/ED) manual

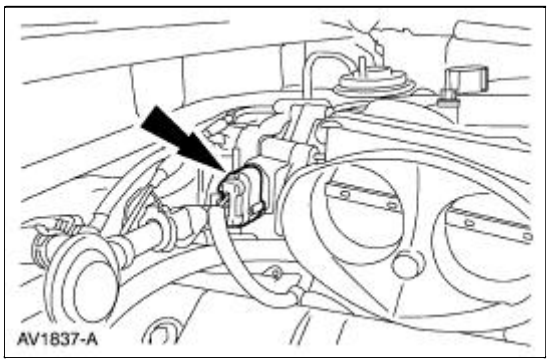
Throttle Body

Removal

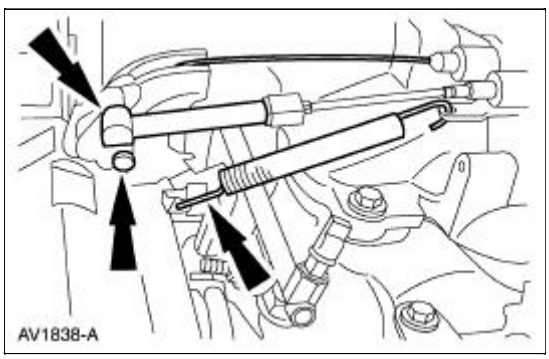
WARNING: Do not smoke or carry lighted tobacco or open flame of any type when working on or near any fuel related components. Highly flammable mixtures are always present and can ignite. Failure to follow these instructions can result in personal injury.

CAUTION: The throttle body bore and plate area have a special coating and cannot be cleaned.

1. Remove the air intake scoop bracket. For additional information, refer to Section 303-12 .
2. Remove the air cleaner outlet tube. For additional information, refer to Section 303-12 .
3. Disconnect the throttle position (TP) sensor electrical connector.

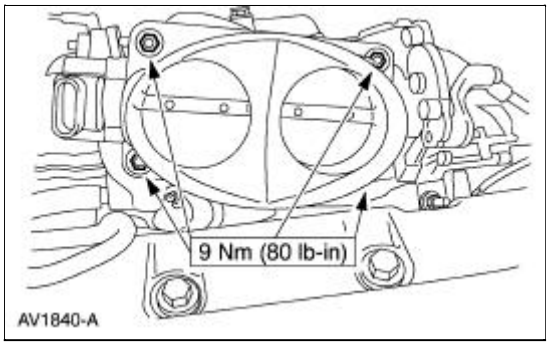


4. Disconnect the accelerator controls.
   - Disconnect the accelerator cable.
   - Disconnect the speed control cable.
   - Disconnect the return spring.



5. **NOTE:** Discard the throttle body gasket after removing the throttle body.

   Remove the throttle body.
   - Remove the four bolts.



Installation

1. **NOTE:** Install a new throttle body gasket.

   To install, reverse the removal procedure.

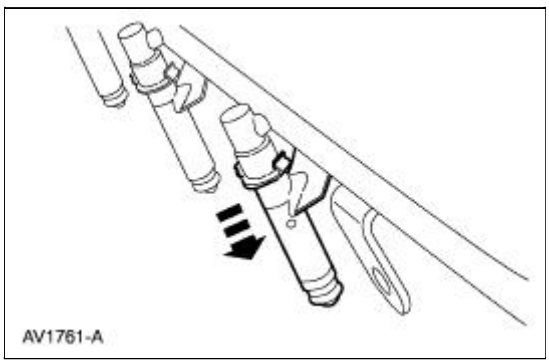
Fuel Injectors

Removal

WARNING: Do not smoke or carry lighted tobacco or open flame of any type when working on or near any fuel related components. Highly flammable mixtures are always present and can ignite. Failure to follow these instructions can result in personal injury.

WARNING: Fuel in the fuel system remains under high pressure even when the engine is not running. Before working on or disconnecting any of the fuel lines or fuel system components, the fuel system pressure must be relieved. Failure to follow these instructions can result in personal injury.

1. Remove the supply manifold. For additional information, refer to Supply Manifold in this section.
2. Remove the eight fuel injectors from the supply manifold.



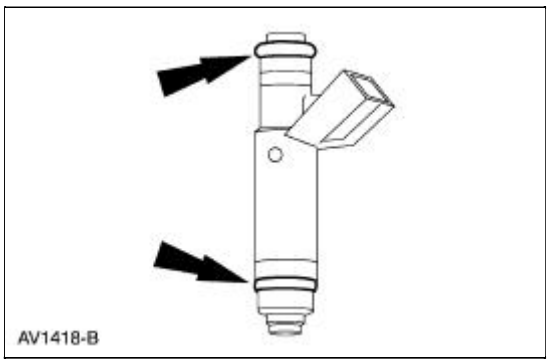
Installation

CAUTION: The retaining clip must be in the upper groove on the injector or the injector can become loose.

1. **NOTE:** Inspect the two O-rings from each fuel injector. Install new O-rings as needed.

   NOTE: Lubricate the new O-rings with clean engine oil.

   To install, reverse the removal procedure.

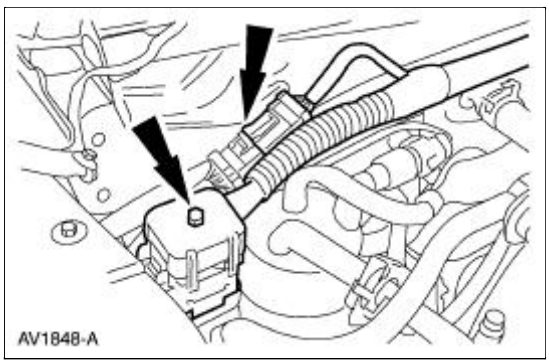


Wiring Harness

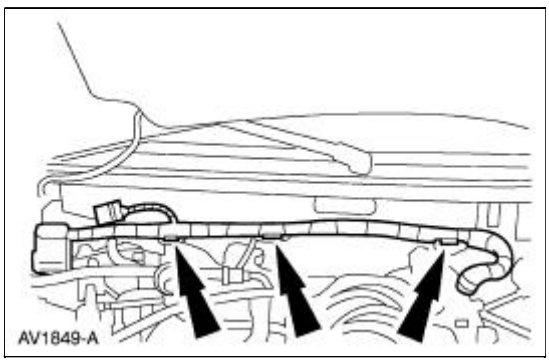
Removal

WARNING: Do not smoke or carry lighted tobacco or open flame of any type when working on or near any fuel related components. Highly flammable mixtures are always present and can ignite. Failure to follow these instructions can result in personal injury.

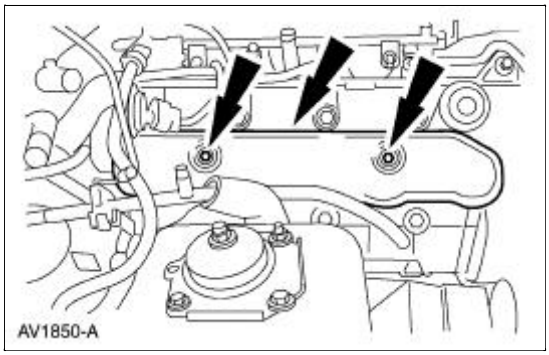
1. With the vehicle in neutral, position it on a hoist. For additional information, refer to Section 100-02 .
2. Disconnect the battery ground cable. For additional information, refer to Section 414-01 .
3. Remove the upper intake manifold. For additional information, refer to Section 303-01D .
4. Disconnect the following connectors:
   - The 42 pin engine bulkhead electrical connector.
   - The 16 pin electrical connector.



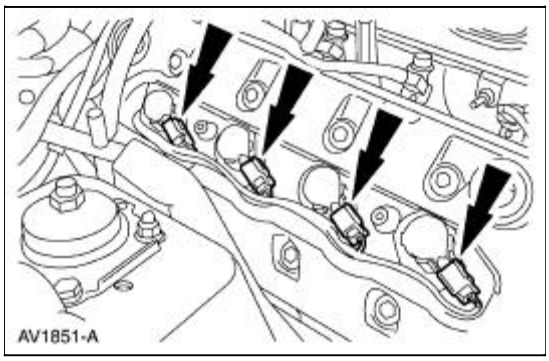
5. Separate the wiring harness from the dash panel.



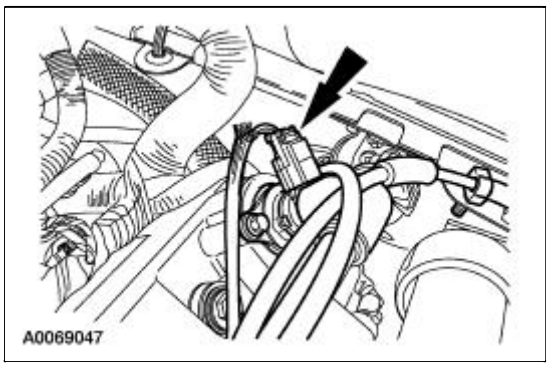
6. Remove the RH ignition coil cover.
   - Remove the bolts.
   - Remove the coil cover.



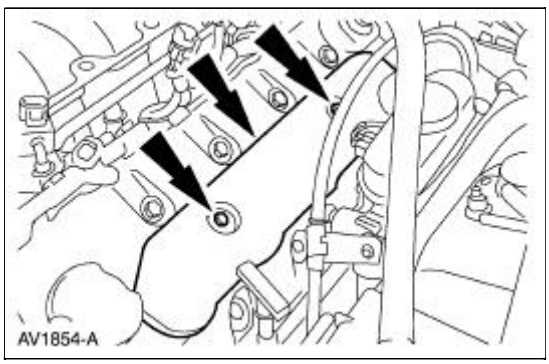
7. Disconnect the RH ignition coil electrical connectors.



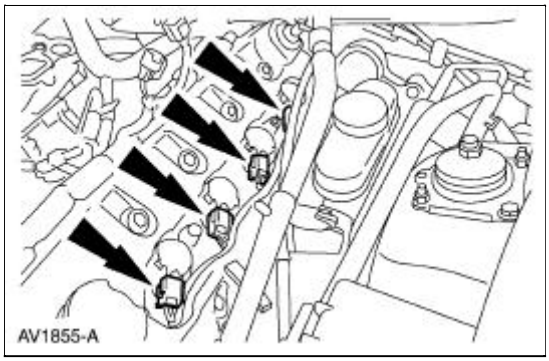
8. Disconnect the heated positive crankcase ventilation (PCV) valve electrical connector.



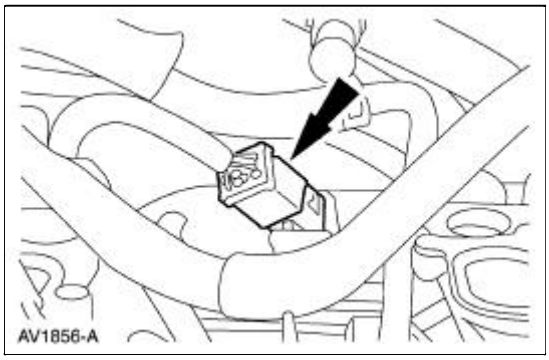
9. Remove the LH ignition coil cover.
    - Remove the bolts.
    - Remove the coil cover.



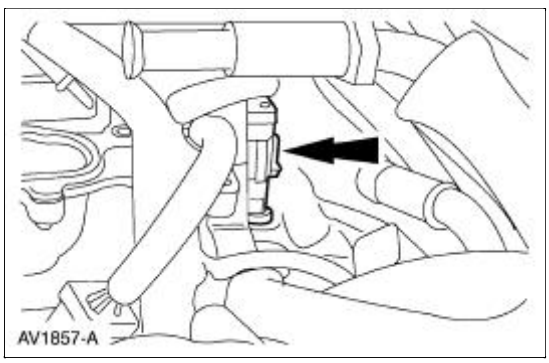
10. Disconnect the LH ignition coil electrical connectors.



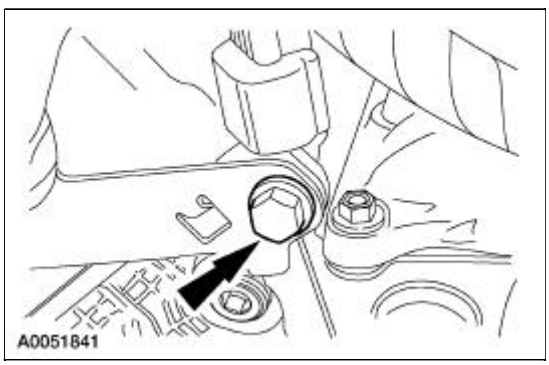
11. Disconnect the transmission main control harness electrical connector.



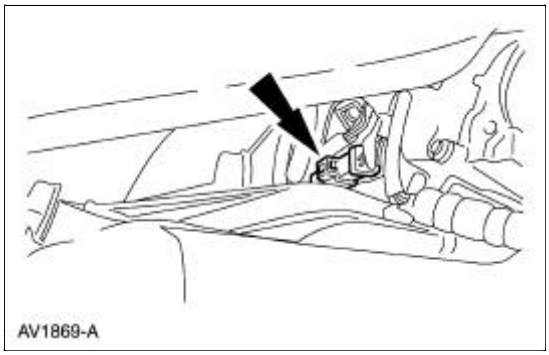
12. Disconnect the engine control jumper harness electrical connector.



13. Remove the wiring harness bracket bolt.

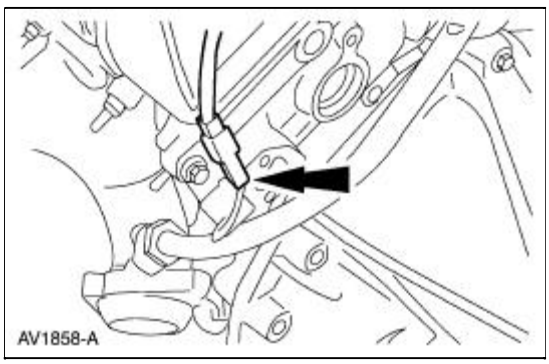


14. Disconnect the RH heated oxygen sensor (HO2S) electrical connector.

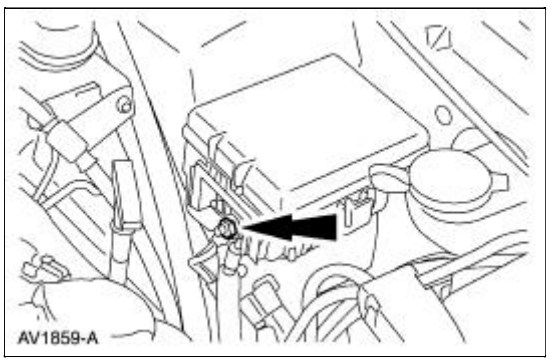


15. **NOTE:** LH side is shown, RH side is similar.

    Disconnect the two radio ignition interference capacitor electrical connectors.

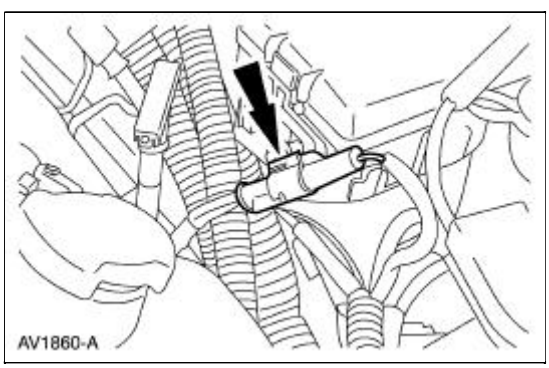


16. Disconnect the battery supply wire from the power distribution box stud.

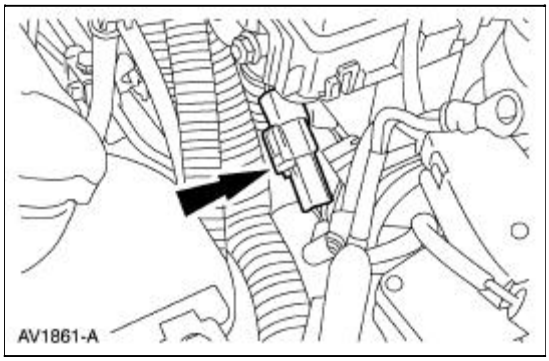


17. **NOTE:** The electrical connector is located under the power distribution box.

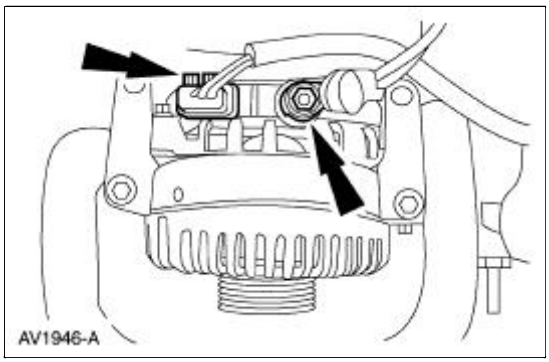
    Disconnect the electrical connector.



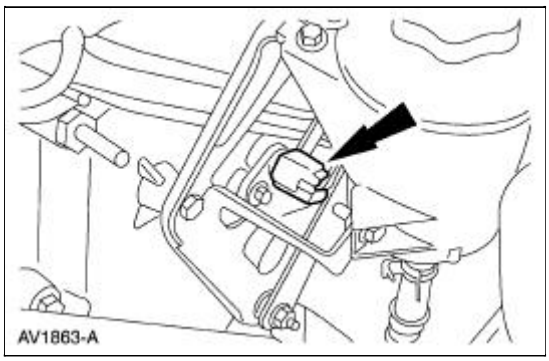
18. Disconnect the electrical connector.



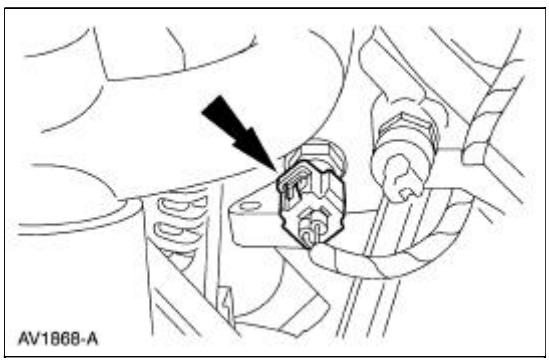
19. Disconnect the following generator electrical connectors:
    - Battery power supply wire.
    - Voltage regulator.



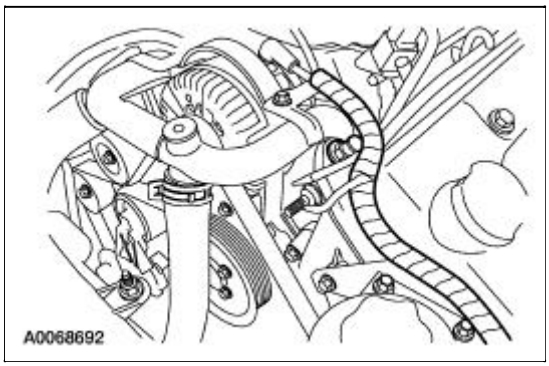
20. Disconnect the camshaft position (CMP) sensor electrical connector.



21. Disconnect the engine coolant temperature (ECT) sensor electrical connector.

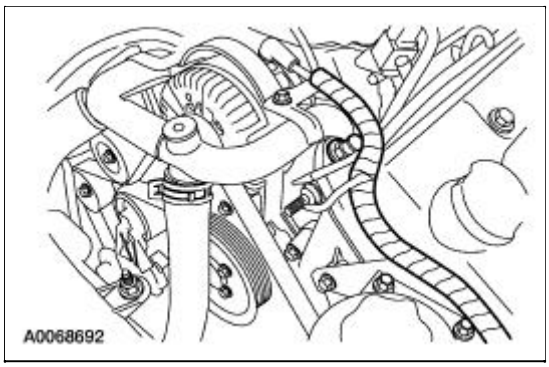


22. Remove the wiring harness.
    - Separate the wiring harness from the LH valve cover stud bolt.
    - Separate the wiring harness from the power steering reservoir bracket.

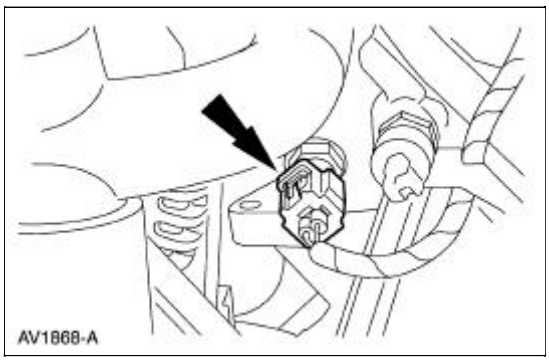


Installation

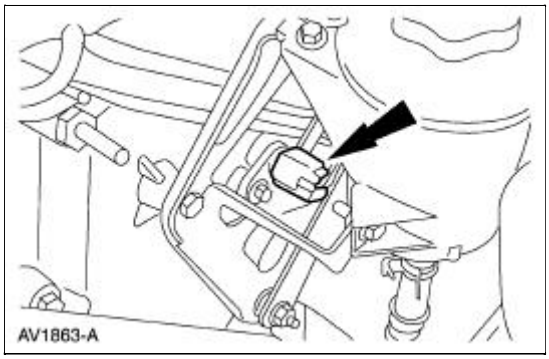
1. Position the wiring harness:
    - Install the wiring harness retainer onto the LH valve cover stud bolt.
    - Install the wiring harness retainer into the power steering reservoir.



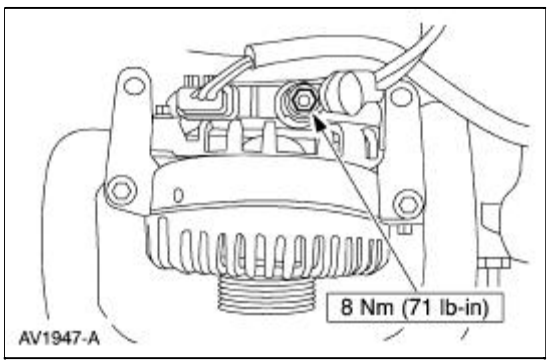
2. Connect the ECT sensor electrical connector.



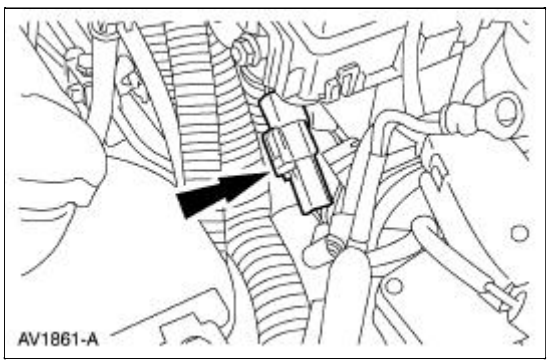
3. Connect the CMP sensor electrical connector.



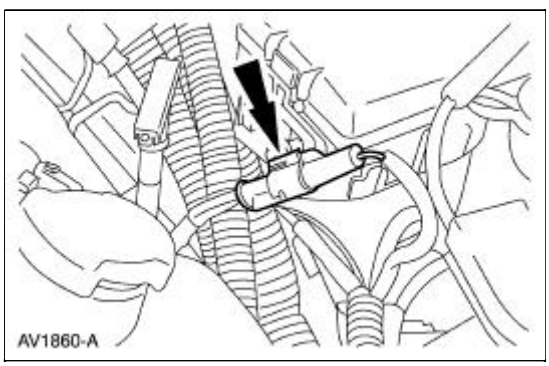
4. Connect the following generator electrical connectors:
    - Battery power supply wire.
    - Voltage regulator.



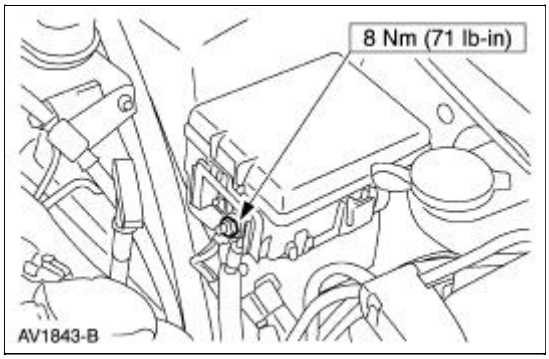
5. Connect the electrical connector.



6. Connect the electrical connector.

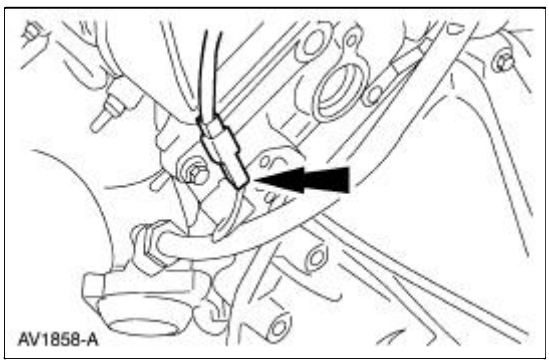


7. Install the battery supply wire to the power distribution box stud.

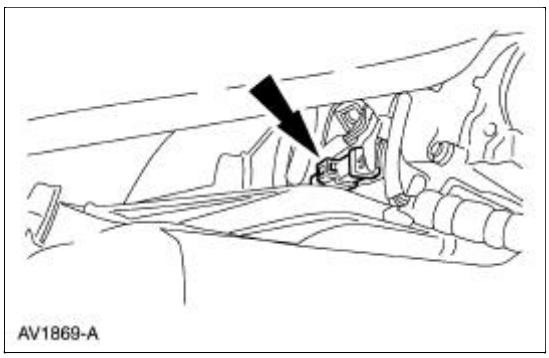


8. **NOTE:** LH side is shown, RH side is similar.

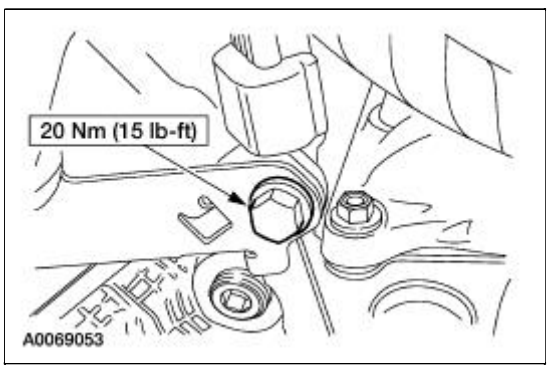
   Connect the two radio ignition interference capacitor electrical connectors.



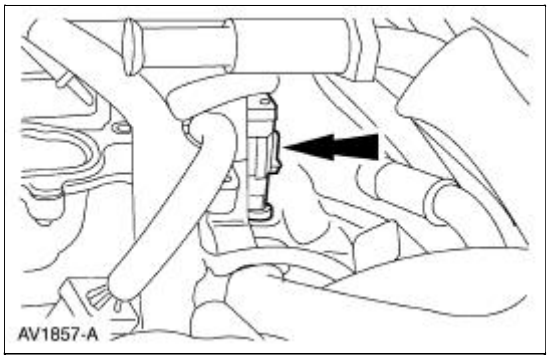
9. Connect the RH HO2S electrical connector.



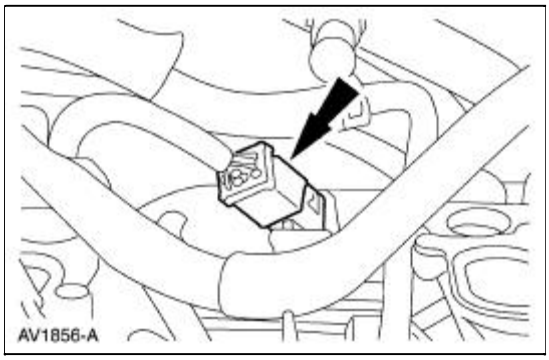
10. Install the wiring harness bracket bolt.



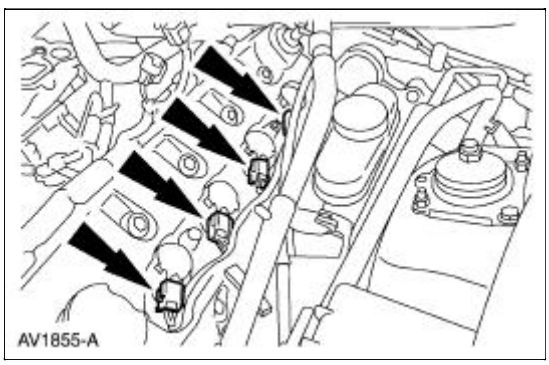
11. Connect the engine control jumper harness electrical connector.



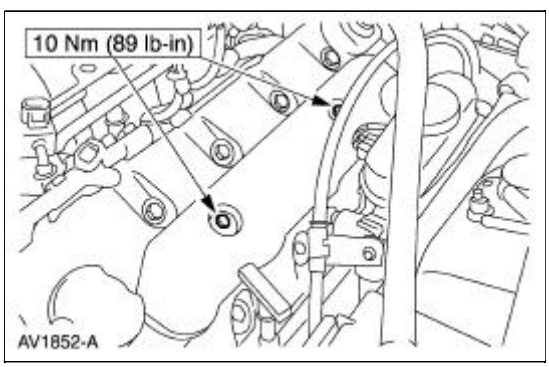
12. Connect the transmission main control harness electrical connector.



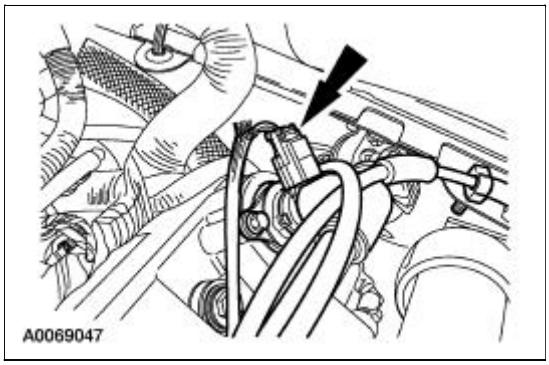
13. Connect the LH ignition coil electrical connectors.



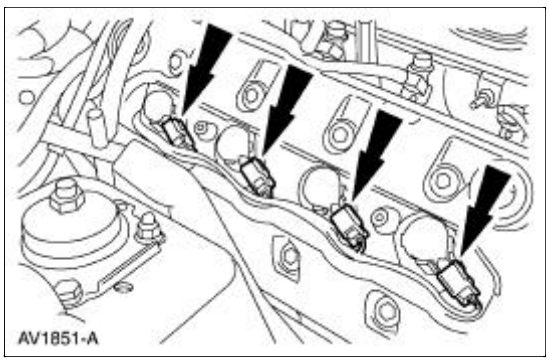
14. Install the LH ignition coil cover and bolts.



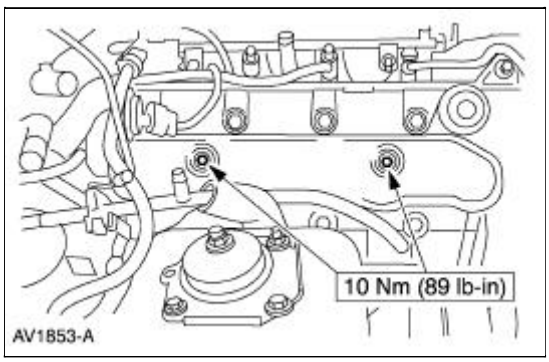
15. Connect the heated positive crankcase ventilation (PCV) vlave electrical connector.



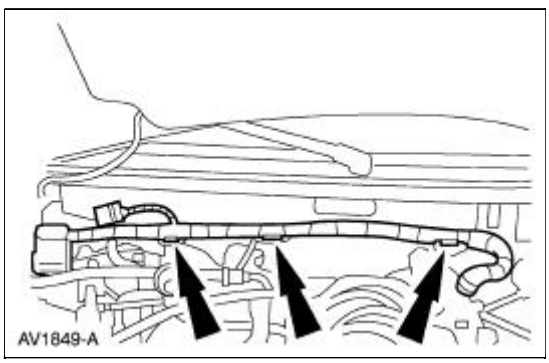
16. Connect the RH ignition coil electrical connectors.



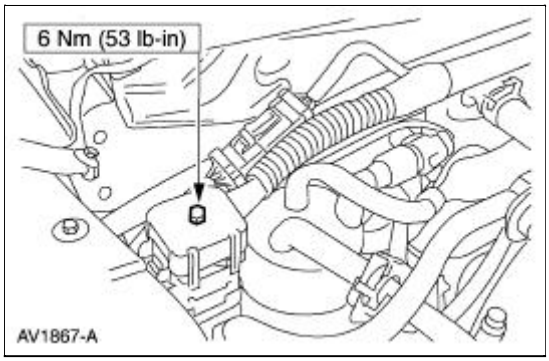
17. Install the RH ignition coil cover and bolts.



18. Install the wiring harness retainers into the dash panel.



19. Connect the following connectors:
    - The 42 pin engine bulkhead electrical connector.
    - The 16 pin electrical connector.



20. Install the upper intake manifold. For additional information, refer to Section 303-01D .

21. **NOTE:** When the battery is disconnected and reconnected, some abnormal drive symptoms may occur while the vehicle relearns its adaptive strategy. The vehicle may need to be driven 16 km (10 mi) or more to relearn the strategy.

    Connect the battery ground cable. For additional information, refer to Section 414-01 .

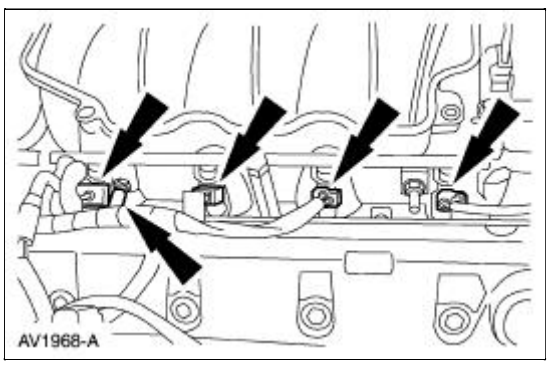
Supply Manifold

Removal

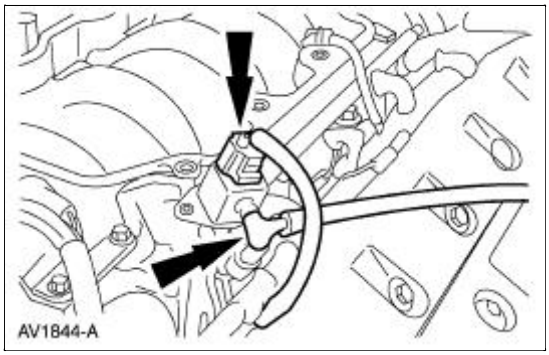
WARNING: Do not smoke or carry lighted tobacco or open flame of any type when working on or near any fuel related components. Highly flammable mixtures are always present and can ignite. Failure to follow these instructions can result in personal injury.

WARNING: Fuel in the fuel system remains under high pressure even when the engine is not running. Before working on or disconnecting any of the fuel lines or fuel system components, the fuel system pressure must be relieved. Failure to follow these instructions can result in personal injury.

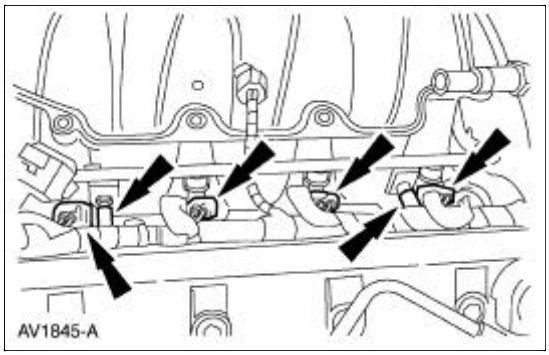
1. Disconnect the battery ground cable. For additional information, refer to Section 414-01 .
2. Remove the upper intake manifold. For additional information, refer to Section 303-01D .
3. Relieve the fuel pressure. For additional information, refer to Section 310-00 .
4. Disconnect the fuel line. For additional information, refer to Section 310-00 .
5. Position the wiring harness aside.
   - Disconnect the RH fuel injector electrical connectors.
   - Separate the harness from the RH fuel supply manifold stud bolt.



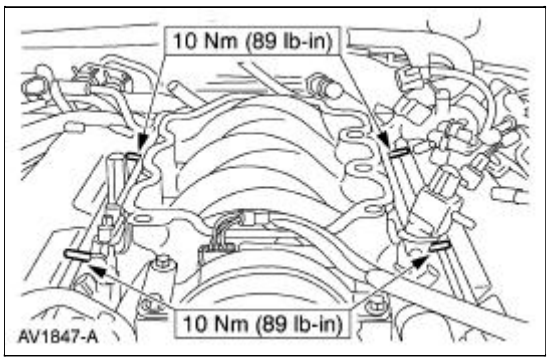
6. Disconnect the fuel pressure sensor.
   - Disconnect the electrical connector.
   - Disconnect the vacuum hose.



7. Position the wiring harness aside.
    - Disconnect the LH fuel injector electrical connectors.
    - Separate the harness from the LH fuel supply manifold stud bolt.



8. Remove the fuel supply manifold.
    - Remove the four bolts.



Installation

1. **NOTE:** When the battery is disconnected and reconnected, some abnormal drive symptoms may occur while the vehicle relearns its adaptive strategy. The vehicle may need to be driven 16 km (10 mi) or more to relearn the strategy.

   To install, reverse the removal procedure.